species at Kew, I may mention, that there are two forms of *Prenolepis braueri*, Mayr., sub-species, *domisthorpei*, Forel, to be found. The one which is jet black, is very abundant in the Fern House, I captured a ♂ there on our last visit. The other which has a good deal of red about the body and legs occurs in the Palm House, though not so commonly. The two forms are not found together. Since this was written I have heard from Prof. Forel that the latter is *P. viridula* sub sp. *atalana*, Forel.

Technomyrmex albipes, Smith, is the most abundant species at Kew, occurring in both the hot and also the cooler houses. We secured a number of specimens of the ergatoid ♂, which Forel* described from my previous specimens. He suggested that they may be caused by the presence of parasites entertained by the *Technomyrmex*, in the same way that Pseudogynes are caused by the presence of *Lomechusa* with *F. sanguinea*. The ordinary winged ♂ is very common, and I have recently taken a ♂ with short wings. This reminds us of the short-winged ♀s of *Lasius alienus* shown by Mrázek† to be infested with a nematoid worm of the genus *Mermis*. He called these ♀s, mermithogynes. Wheeler‡ dissected three out of seven brachypterous females of *Lasius neoniger*, which he had taken in a single colony in Manitou, Colorado. Each was found to contain a large coiled *Mermis*, 53mm. to 55mm. long. Crawley captured at Oddington, near Oxford, in 1899, and again in 1900, a number of brachypterous ♀s of *L. flavus*, walking on the road, and a few macropterous ♀s occurred with them. In 1900, in the same locality, he found in a nest of *L. alienus*, under a stone, several short-winged ♀s. He tells me in this case all the winged females present were brachypterous. It is possible that the short wings in my ♂ *Technomyrmex*, are caused in the same way, when it may be called a "mermithaner." In the *Lasius* ♀s there is nothing unusual, except in the very small size of the wings. Sharp§ mentions that queens of *L. alienus* have been found with short wings, but refers to them as an intermediate form between the females and workers. This, we now know, is not the case.

(*To be continued.*)

Experiments on Vanessa io, L.

By T. REUSS.

All the ova of *Vanessa io*, which I obtained in May and up to June 3rd last (*vide anteà*), were used for experiments undertaken for the purpose of distinguishing, if possible, between "larval" and "pupal" forms of the perfect insect, and of ascertaining in what degree certain conditions of development, acting during the oval and larval stages, influenced certain facial details of the perfect insect. I had already, in the *Entomologist*, vol. xlii., p. 311, given expression to an opinion, based on the results of field-work and of temperature experiments, that *V. io* possessed two characteristic varieties: a "blue-spotted" form with lighter ground colour and two heavy black bands across the hindwing ocellus, and a "blue-banded" form with darker ground

* *Bull. Soc. Vaud.*, 162, 1908, p. 21.
† *Acta. Soc. Ent. Bohem.*, v., 4, 1908, pp. 139-146.
‡ *Jour. Exper. Zool.*, viii., 4, 1910, p. 421.
§ *Camb. Nat. Hist. Insects*, ii., 1899, p. 140.

colour and usually more blue in the hindwing ocellus. The first variety seemed dependent on a cool, comparatively contrastless climate, the second one on hotter summers and stronger contrasts of temperature.

Obviously, if this were so, proof could be easily adduced by rearing one brood of *V. io*, after having divided the ova into two parts, under the two different kinds of temperature conditions in question, and, if not only the pupal developments, but also those of the larval and oval stages were responsible to any extent for the variation of the markings and colours in the imagines, then, though there was the difficulty, that "pupal" heat or cold forms might be *facially* identical with "larval" heat or cold forms, yet the actual identity of either pupal or larval forms could be exposed by further methods of comparison. Thus the different series from *one* brood of *V. io*, suitable for this purpose, should be obtainable by dividing a batch of fresh ova into two parts, and hatching and rearing one part in the day temperature of a sunny, hot season, and the other in the mean shade and night temperature of a cool season—again dividing the resulting pupæ of each part into four other separate parts; one each to develop under the same conditions as the larvæ and ova (+° larvæ and +° pupæ; —° larvæ and —° pupæ), one each to develop under opposite conditions (+° larvæ and —° pupæ; —° larvæ and +° pupæ), one each to be exposed to repeated extremes of temperature—over 37°C. to 45°C. (+° extr. pupæ), and one each to develop in the "normal warm" temperature of about 18°C. (norm. warm pupæ). The signs +° and —° signify 20-37°C. and 8-15°C. respectively. The following notes deal with the results I obtained by rearing three broods of *V. io* from freshly laid ova, and one brood from wild larvæ about a day old, of which the ova had hatched under natural conditions, *i.e.*, cool nights and warm days. Two of the broods were treated exactly in the way described; of another brood, one part of the ova was "iced" for about a fortnight (17 days), the other ova and *all* the larvæ were treated to the mean shade temperature only, while of the last brood *all* the larvæ were reared quickly in temperatures above 20°C. by day and not below 15°C. by night.

To simplify my text, I will call the two common varieties of *V. io* —*i.e.*, the blue-spotted and the blue-banded forms—shown *anteà*, vol. xxi., pl. vii., figs. 9, 12, and figured and described together with the protoid *V. io* ab. *fischeri*, Stdfss., in the *Entom.*, xlii., p. 311, figs. 2, 3—ab. *mesoides* and ab. *teloides*, and connect these names relating to the markings of the forewings with others describing the ground colour or the amount of blue in the hindwing ocellus. Thus *V. io* ab. *mesoides-clara* and ab. *teloides-clara* are the orange, and *V. io* ab. *mesoides-brunnea* and ab. *teloides-brunnea* the almost chocolate-brown forms of both varieties. The names *splendens* and *lucidocellata* (vide *anteà*) refer to the extreme amount of blue in the hindwing ocelli, and ab. *nigriocellata* has a black hindwing ocellus with only four or five separate blue spots. Ab. *magnimaculata* has very much enlarged white spots in the forewing ocelli, while in ab. *parvimaculata* the white spots below the ocellus tend to disappear (=ab. *exmaculata trans.*), and the spots inside the ocellus are very small. Ab. *marginalis* has black marginal spots of such size, that they tend to coalesce and form a black margin in the forewing. In the following records the relations between the facial *details* of the imagines and the conditions

of development in the oval, larval, or pupal stages may easily be checked. Also the influence of the parental (♀) facial detail. becomes evident, and this influence presents itself only in those specimens that were reared in approximately normal conditions of temperature.

Brood I.—The ova, bluish-green, 7-9 ribbed, were laid on the 20.5. by a *V. io* ♀, which was normal in facies, being in every way intermediate between ab. *mesoides* and ab. *teloides*.

1. +° ova and +° larvæ (20—37°C.).

a and a_1. (+° and +° extr. pupæ, the latter transferred *immediately*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20-27.5	—	10-11.6	—	20-22.6 =31-33 days.
7	14-15	:	10-11(days)=ab. *teloides-lucidocellata*	

and *splendens*, ab. *marginimaculata-obscura* (both numerous) two ab. *belisaria*, Obth., *trans*, one a cripple. All are *dark* in ground colour, near *brunnea;* two specimens are ab. *marginalis trans* (+° pupæ), one of these is lighter in the ground colour. 28 specimens were set.

b. (Norm. warm pupæ, transferred *immediatcly*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20-27.5	—	10-11.6	—	25.6 =36 days.
7	14-15	:	14-15(days)=ab. *teloides-lucidocellata*	

dark in ground colour, not quite *teloides-brunnea*. 2 examples set.

c. (−°pupæ transferred *immediately*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20-27.5	—	10-11.6	—	8-9.7 =49-50 days.
7	14-15	:	27-29 (days)=ab. *teloides*, normal to	

lighter in ground colour, not quite *teloides-clara*, three ab. *teloides-lucidocellata*, all the others are near the latter form. Three specimens approach the parent ♀ somewhat. 16 specimens were set.

2. −° ova and −° larvæ (8—15°C., no sunshine, the insects were kept mostly in the dark).

a and a_1. (+° and +° extr. pupæ transferred *dircctly* after pupation.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20.5-6.6	—	6.7	—	16.7 =57 days.
17	30	:	10 (days)=one ab. *belisaria*, crippled,	

but fine in colour, hindwings ex-oculated; nine pupæ dead. The + pupæ produced var. *teloides*, dark hindwing ocellus exactly like the parent ♀.

b. (Warm pupæ, not above 30°C., transferred *immediately*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20.5-6.6	—	6.7	—	15-1.67 =56-57 days.
17	30	:	9·10 (days)=ab. *teloides*, *dark* hind-	

wing ocellus exactly like parent ♀. 2 specimens set.

c_1. (−°pupæ transferred *two days after pupation* to extreme temperature conditions.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20.5-6.6	—	17.7	—	28.7 =69 days.
17	41	:	11 (days)=ab. *mesoides*, typical speci-	

mens, except for a *darkening* of the ground colour. For the first time the specimens of this brood show the heavily double-barred hindwing ocellus. 2 examples set.

c_2. (−°pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged
20.5-6.6	—	14-17.7	—	13-14.8=85-86 days.
17	38-41	:	27-31 (dys.) = ab. *mesoides*, ground	

colour normal to lighter, *all* have the two heavy black bands in the

hindwing ocellus; one ab. *mesoides-viridiocellata;* three ♀s approach the parent ♀ in the *forewings*. 26 specimens set.

Brood II.—The ova answering to the same description as those of brood I. were laid on the 26.5. by a female of *V. io* ab. *mesoides-lucidocellata*. This female has well marked black marginal spots (full row), the outline of the second costal blotch next the ocellus is rectangulated (this detail proved to be transmittable by hereditism to a remarkable degree, otherwise in both *V. io* and *V. urticae* it is a sign of the influence of cold) and in the large blue hindwing ocellus there are two faint white spots.

1. (+° ova and +° larvæ).

a and a_1 (+° pupæ and +° extr. pupæ) the latter transferred immediately.

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26.5-2.6	—	17-18.6	—	26-28.6 = 31-33 days.
7	15-16	—	8-11 (dys.) = var. *teloides-lucidocellata*	

and ab. *teloides-splendens*, one *teloides*, one *mesoides-parvimaculata* (dark), two ab. *belisaria*, Obth., *trans.*, ♂ and ♀, the very dark male tending to lose the ocelli in the forewings, the lighter female, however, in the hindwings. Both these aberrations are also *magnimaculata* and the male is *brunnea*. 19 examples were set.

b. (Warm pupæ).

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
26.5-2.6	—	17-18.6	—	27-28.6 = 32-33 days.
7	15-16	:	9-11 (days) = var. *teloides*, one ab.	

teloides-lucidocellata; three of the specimens with an indication of a "nota;" ground colour darker than normal. 6 specimens set.

c. (−°pupæ transferred immediately.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
26.5-2.6	—	17-18.6	—	11.7 = 46 days.
7	15-16	:	23-24 (days) = var. *teloides*, one ab.	

teloides-lucidocellata. The ground colour is normal. 5 specimens set.

A few specimens in all three groups have the faint white spots of the parent form in the ocelli of the hindwings. Nearly a hundred pupæ succumbed to extreme temperatures (50° C.) under a_1. The rise in temperature above 45° C. was accidental; in the *sensitive stage* soon after pupation the pupa often bear such heat without injury.

2. −°ova and −°larvæ.

a_1. (+°extr. pupæ transferred after one day.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
26.5-11.6	—	20.7	—	29.7 = 64 days.
16	39	:	9 (days) = 1 ab. (*teloides-*) *brunnea-*	

lucidocellata ♀, 1 ab. *teloides-brunnea*, ♂, both specimens tend towards *magnimaculata;* 2 cripples of the form *teloides-brunnea*. 1 dead, 2 specimen wsere set.

b (−° pupa).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
20.5-11.6	—	16.7-20.7	—	15.-16.8 = 81-82 days.
16	35-39	:	26-31 (days) = var. *mesoides*, ground	

colour normal, one ab. *mesoides-brunnea*, one ab. *mesoides-splendens*, ♀, two ab. *mesoides-lucidocellata*, ♀s, and some specimens near the latter, showing the influence of the parental facies, the ocelli being much bluer than is usual in var. *mesoides*. 29 examples were set.

In 22 of 41 specimens the outline of the second costal blotch of the forewings is nearly rectangular on the side enclosing the ocellus; the first costal blotch is very much enlarged (in *all* the specimens), and betrays its origin from two separate black spots. Both details were already noticeable in the parent female, and have reappeared in this group of the brood only. Several specimens

show signs of a "nota," and, in addition, of a basal suffusion, reaching as far as the first costal blotch, as, for instance, in *V. urticae* var. *ichnusa*. Two male specimens showed these details strongly developed = ab. *basi-obscura*. The white spots on the hindwing ocelli of the parent form did not reappear in this group, and the black marginal spots in the forewings were but slightly indicated in some specimens.

b_1 (— ° pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26.5-11.6	—	23-24.7	—	20.8 = 86 days.
16	42-43	:	28-27 (days) — °var. *mesoides*, only. In one specimen there appears in the outer angle of the hindwing and above the ocellus (left wing only) another spot, which is also *marked on the underside*, and represents an evidently inherent detail of the Vanessid facies in general. 9 examples were set.	

Brood III.—The bluish-green 7-9 ribbed ova were laid on the 28.V. by a fine female of *V. io* ab. *lucidocellata*, with angular outline to the second costal blotch, and with two white spots in the hindwing ocellus. The specimen was in very good condition, but got severely damaged in capture.

The ova all succumbed after an exposure to + 45°C.

Brood IV.—The ova, bluish-white, 7-9 ribbed, were laid on the 3.6. by a rather small specimen of *V. io* ab. *brunnea*, which was normal, except for the distinctly brown ground colour.

Part of the ova were "iced" in a refrigerator for 17 days, and afterwards allowed to develop in the mean shade-temperature till pupation of the resulting larvæ. All the ova emerged safely. The other part of the ova, with which I shall deal first, developed in the shade-temperature.

1. — °ova and — °larvæ.

a (+ °pupæ and + °extr. pupæ, up to 40°C., transferred *immediately*.)

Oval stg.	Larval stg.	Pupated	Pupal stg.	Emerged.
3.6-17.6	—	1.8-2.8	—	14-16.8 = 72-74 days.
14	45-46	—	12-15 (dys.) = ab. *teloides-lucidocellata*. *All* the 21 specimens are remarkable for the jagged outline shown by the outside rim of the almost egg-shaped hindwing ocellus—they are darker than normal in the ground colour, almost ab. *brunnea*, one ab. *nigrifasciata trans*. Other specimens show this tendency also, and *all* are near *magnimaculata*, while four tend towards ab. *belisaria* in the forewings.	

b. (pupated 31.7-2.8, kept as — °pupæ till 16.8, then they were exposed to + 42°C. down to + 25°C.).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-17.6	—	31.7-2.8	—	19.8 = 77 days.
14	44-46	—	17-19 (dys.) = ab. *mesoides*, darker, browner than normal in ground colour, hindwing ocelli rounded, the 7 specimens are near the parent ♀ in facies. One ♀ shows the breaking up of the first costal blotch into two spots.	

c. (— °pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-17.6	—	28.7-2.8	—	24.8-26.8 = 82-86 days.
14	41-46	—	22-29 (dys.) = var. *mesoides*, three specimens (♂s) with indications of a "nota" and basal suffusion spreading from the base to the nota. Hindwing ocelli rounded, except in three specimens. The 30 specimens are near the ♀ again—but now the ground colour is almost normal. The first costal blotch is "hook"-shaped in many specimens, indicating its tendency to break up into two spots—as in *V. urticae—P. c-album*.	

2. ("ice" ova and — °larvæ, the ova were "iced" from June 8th to the 25th) All the resulting specimens have rounded hindwing ocelli.

a. (+ °pupæ, up to 40°C. (from 12.8 onwards = 4-5 days after pupation).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-28.6	—	7-8.8	—	18.8=76 days.
25	40-41	—	10-11 (dys.)=of two pupæ ab. *teloides-brunnea*, one crippled.	

a_1 (+° extr. pupæ, up to +45°C. from 16.8 onwards, kept as −°pupæ till 8 to 9 days after pupation).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-28.6	—	7-8.8	—	22.8=80 days.
25 :	40-41	:	14-15 (days)=of 5 pupæ: 5 ab. *teloides-brunnea*, all cripples, one only slightly so.	

a_2 (+° extr. pupæ, up to +42°C. from the 27.8 onwards=kept as −° pupæ till 19 to 20 days after pupation).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3-28.6	—	7-8.8	—	30-31.8=89 days.
25	40-41	:	22-24 (days)=of 7 pupæ: 4 (2 ♂ s, 2 ♀ s) ab. *teloides-brunnea*, perfect specimens, the females with *normal light* rings of greyish colour encircling the hindwing ocelli. One male was almost chocolate-coloured, 2 crippled ab. *mesoides-brunnea*, 1 pupa was dead. The tendency to ab. *nigrofasciata* was visible in one ♂ specimen.	

b (−°pupa).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3-28.6	—	7-8.8	—	2-5.9=94 days.
25	40-41	:	25-29 (days)=of 16 pupæ: five ab. *mesoides*, four were var. *teloides*, and seven intermediate forms. Two specimens show traces of a "nota." The ground colour was almost normal, slightly browner. The seven intermediate specimens would be like the parent form if the ground colour were more brown. The size of the specimens was normal, mostly somewhat larger than that of the parent ♀, seldom smaller. There were no large forms, neither in pt. 1, nor in pt. 2, but in Brood I, of which the ♀ was a larger one, many very large specimens made their appearance from the +° pupæ, both from +° and −° larvæ. The results from part 2 of brood IV, compared with those from part 1, point out, I think, that the retardation of the oval development strengthened hereditism, as shown by a somewhat less characteristic reaction to low temperature (which was not below the shade or night temperature of the season), while the browning, darkening effects of heat, as compared with the results from other broods, were much heightened—evidently by the influence of the parent ♀, ab. *brunnea*. This wild ♀, ab. *brunnea*, need not, however—as shown by the ab. *mesoides-brunnea* from—°pupæ and larvæ of brood II—itself have been developed in the pupal stage by heat, the brown colour, *especially of a lighter shade*, being producible by opposite (retarding) influences, acting already in the larval stages.		

These records seem, so far, to show that the influence of the parent female, as regards distinctive facial detail, makes itself felt in a very decided way, when ova, larvæ, and pupæ are bred *in the mean shade temperature*. The parent males were unknown to me, but if they were nearer ab. *teloides* (all those I saw flying about, and could examine in the spring were so, and on the 3rd May, I captured a very worn ♂, ab. *teloides-nigrifasciata*, *trans.*), then their influence would have come out in the +°larvæ and +°pupæ, very strikingly.

As regards the influence of the oval and larval stages in broods I and II, the records show that heat ova and heat larvæ, produce ab. *teloides*, and will still produce ab. *teloides* (as oval and larval form), but of a lighter ground colour, even if the pupæ are, after pupation, immediately transferred to the mean shade temperature, in which

they take 23-28 days to develop, while if left in the same conditions as the larvæ, they emerge in 8-11 days. On the other hand, all "shade" ova, larvæ, and pupæ produce var. *mesoides* (as oval and larval form), the pupal stage extending over 26-31 days. Even if the —°pupæ from —°ova (I do not include the "ice" ova of brood IV) and —°larvæ are transferred to hot, sunny cages they will not produce var. *teloides* unless they are transferred *within a day* or so after pupation. If exposed to heat *later*—or if only so exposed to an insufficient degree—they emerge with perhaps a darkened ground colour as ab. *mesoides-brunnea*. Similarly, the pupæ from +°ova and larvæ produce var. *mesoides*—and beyond that even the protoid ab. *fischeri*—but only *if they are directly after pupation* transferred to a refrigerator for some weeks, *and then allowed to develop in a normal temperature**—for, as has been shown, these pupæ from +°ova and larvæ *resist the constant influence of the lowest temperatures in the English summer*—still emerging as var. *teloides* (here an "oval and larval" form, following out also the facial *tendency* of the parent male in *both* sexes) after nearly a month of pupal development.

Broods I and II had, however, been treated to the two possible extremes of temperature conditions connected with very hot, or with very cool seasons, providing also for a very sunny exposed situation of the ova and larvæ, or for a well shaded position of the brood in a wood. Under such conditions the ova and larvæ would naturally be influenced much more strongly in one direction or the other, than under normal conditions.

In conclusion, the following records of brood V show that when the ova and larvæ are reared in nearly normal conditions, then then *they do not any more influence the pupal development in the degree*, as did the larvæ of broods I and II, that then, in fact, *the mean shade and night temperature, acting on the pupae only, will cause* var. *mesoides to develop exclusively*, and in the *extreme form*, not far from ab. *fischeri*, while warmth and sunshine will produce var. *teloides* with equal certainty and in great perfection. Both var. *mesoides* as also var. *teloides* would be "*pupal*" *forms* in this case.

Brood V.—Both male and female parent forms unknown. The ova developed in their natural environment in the temperature of the season. The figures given below for the oval stage are assumed, but I think are correct.* The young larvæ —captured soon after they had emerged—were all bred in conditions, which I will call "normal warm," the temperature rising when the sun shone in the daytime and not falling below 15°C. at night. (In the open air, the thermometer repeatedly showed 5-8°C., the temperature only once keeping just above 15°C. in the night of

* The "sensitive" stage is retained for weeks at a temperature of +1° to +2°C. development being *suspended*. If, for instance, larvæ hanging up for pupation are placed in these low temperatures, they will hang unaltered for four weeks at least —and, if brought into normal conditions, yet pupate and emerge as normal specimens. High temperatures would, therefore, wipe out the effects of the long "icing," and for that reason pupæ should be left some days in 10-12°C. after leaving the refrigerator.

* The only fine days suitable for ovipositing, "within reach," were May 24th, 26th, 28th, and June 3rd. Comparison with my records make the first and last dates impossible. The maxima and minima of the temperatures from May 26th to June 10th, read as follows in °F. :—**71,** 65, **74,** 68, 63, 59, 67, 69, **72,** 65, 61, 67, 78, 76, 76, 64° C. = daily shade maxima; and **43, 49, 49, 52,** 45, 48, 45, **47, 45,** 43, 47, 48, 53, 55, 52, 54 = nightly minima, beginning May 25th-26th. Mean temperatures = 68.3°F. = 20°C., by day; 48.8°F. = 9.3°C., by night; and 58.4°F. = 14.7°C., for the whole period.

June 13th). The conditions of development were evidently most suitable to the larvæ; the resulting imagines were very fine specimens.

1. (Normal ova and normal warm larvæ).

a (+°pupæ, not above 37°C. transferred immediately.)

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6	—	27-28.6	—	6-8.7 = 39-43 days.
13 or 15	17-18	—	8-11 (days) =	of 78 pupæ, all emerge as var. *teloides*, but among these there are 9 ab. *teloides-nigrifasciata*, and 37 other specimens show the same aberrational tendency. The ground colour was darkened in all the specimens, and among them are also 15 *lucidocellata*, 7 belonging to the fasciated, and 8 to the common forms of *teloides*. The tendency to ab. *marginalis* was visible in a few specimens. All but the 9 ab. *teloides-nigrifasciata* were let fly.

b. (" warm " pupæ, not below 15°C.).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6	—	27-28.6	—	9-11.7 = 42-46 days.
14 or 16	17-18	—	11-14 (days) =	of 25 pupæ all were var. *teloides*, tending more or less towards *nigrifasciata* and *marginalis*. Ground colour dark, 11 specimens were set.

c_1. (transferred as larvæ (pupating) to the mean shade-temperature, pupated 30.6 (instead of 28.6). After the 6.7 the pupæ were kept at +20-40°C).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6	—	30.6	—	16.7 = 49-51 days.
13 or 15	20	—	16 (days) =	of seven pupæ, seven fine ab. *mesoides-brunnea*, one with grey hindwing ocellus. The wing margins were more dentated than usual. All were set. The sensitive stage had evidently been passed—*i.e.*, the form *mesoides* had been fixed in these pupæ by the 6.7 at about 10-12°C. The nights were only 8°C. warm at that period, the thermometer recording 50°F. (10°C.) only on the 30.6.

c_2. (transferred as c_1, but kept in the cold till the 16.7, afterwards + 25 to 45°C. (7 + extr. °pupæ), and + 25 to 40°C. (6 + °pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6	—	30.6	—	21-22.7 = 54-57 days.
13 or 15	20	—	21-22 (days) =	the 6 + pupæ emerge as rather dark var. *mesoides*, of the 7 + extr. °pupæ only one emerges as a fine ab. *mesoides-brunnea*, the rest are dead or cripples of the same form. This time the ground colour only was influenced by the extreme temperatures. All were set.

c_3. (transferred as under c_1, but left wholly in the cold).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6	—	28.6-2.7	—	1-3.8 = 65-69 days.
13 or 15	18-22	—	30-36 (days) =	all the 70 pupæ emerge as normal or light colored var. *mesoides*, extreme form, with (in the ♀ s) a full row of black spots in the margins of the forewings; 36 were set.

Of 296 specimens here recorded 190 are ab. *cyanosticta*, Rayn.

Some Parasites of Lasius fuliginosus, L. niger, and L. flavus.

By W. C. CRAWLEY, B.A., F.E.S.

During August and September, 1898, I had a colony of *Lasius fuliginosus* in a " Lubbock " observation nest. On August 29th, I noticed among the larvæ three small brown objects, each stationed on a larva. These mites were about the size of a pin's head, and had a highly polished shell; the legs, which did not project beyond the edge of the shell, were soft and incapable of gripping the body of the larva. These parasites occasionally changed their position on the larvæ, and did not